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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/557,511	11/21/2005	Jee Ho Kim	LEE0042US	8814
23413 7590 01/07/2010 CANTOR COLBURN, LLP 20 Church Street 22nd Floor Hartford, CT 06103				
EXAMINER CONLEY, O'K				
ART UNIT 1795		PAPER NUMBER		
NOTIFICATION DATE 01/07/2010		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/557,511

Applicant(s)

KIM ET AL.

Examiner

HELEN O.K. CONLEY

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-7,9,10 and 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-7,9,10,12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicants' amendments have been received on September 28, 2009. Claims 1, 5, 6 are amended. Claims 3, 8 and 11 are amended.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action.

Claim Rejections - 35 USC § 112

3. The rejections under 35 U.S.C 112, second paragraph, on claims 3 and 11 are withdrawn because Applicants have cancelled the claims.
4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 4, 9, 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, these claims recites, "copolymers and crosslinked polymers consisting of at least two of them" is unclear because it is open ended. What polymers constitutes "two of them." The Markush group is unclear.

Claims Analysis

6. For the purposes of compact prosecution the term "a pattern" is found on Page 7 of Applicants specification and will be interpreted as such

Claim Rejections - 35 USC § 102/103

7. The rejections under 35 U.S.C. 102 (b) as anticipated by or, in the alternative, under 35 U.S.C. 103 (a) as obvious over Kawakami, on claims 1, 2, 5-7, 10 are maintained. The rejections are repeated below for convenience.

8. The rejections under 35 U.S.C. 102 (b) as anticipated by or, in the alternative, under 35 U.S.C. 103 (a) as obvious over Lee, on claims 1, 2, 5-7, 10 12 are maintained. The rejections are repeated below for convenience.

9. The rejections under 35 U.S.C. 102 (b) as anticipated by or, in the alternative, under 35 U.S.C. 103 (a) as obvious over Lee and Kawakami, on claims 3, 8, 11 are withdrawn because the Applicants cancelled the claims.

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, 2, 4-7, 9, 10, 12 are rejected under 35 U.S.C. 102 (b) as anticipated by or, in the alternative, under 35 U.S.C. 103 (a) as obvious over Kawakami (US Patent 5,853,914).

Regarding claims 1, 5, 6, the Kawakami reference discloses a battery with a cathode and anode and a sheet (Applicant's regular shape) of separator comprising gel

coated on one side (approximately 50%) of the separator surfaces (Fig. 3(d)) and uncoated on the other separator surface in which anticipates the claimed invention. In addition, the instant claimed invention is not novel over the Kawakami. Although the Kawakami reference does not specifically disclose, a coating of gel polymer over 40-60% of a total separator area, however, the Kawakami reference discloses that the size of the gel sheet can be controlled to distribute a given pressure(5:15-25). Therefore, it would have been obvious to one of skilled in the art at the time the invention was made to Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to choose the instantly claimed value through process optimization, since it has been held that the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable values involve only routine skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980). The battery assembly further comprises a cathode current collector (Applicants' positive terminal; 814) and anode current collector (Applicants' negative terminal; 822) connected to a aluminum plate (820; 25:5-10)). Furthermore, Fig. 3 illustrates the polymer gel to be a sheet or a film pattern.

Regarding claims 1, 2, 5-7, 10, It is noted that the claims comprises process limitations in such as "coated" or "gravure coating method" are product-by-process claims. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re

Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Since separator is the same as that of the Applicant's, Applicant's process is not given patentable weight in this claim.

Regarding claims 4, 9 and 12, the Kawakami et al. reference discloses copolymers and crosslinked polymers as the gel polymer (9-10:30-35)

12. Claims 1, 2, 5, 10, 12 are rejected under 35 U.S.C. 102 (b) as anticipated by or, in the alternative, under 35 U.S.C. 103 (a) as obvious over Lee et al. (US Publication 2002/0187401).

Regarding claims 1, 4, 5, 12, the Lee reference discloses a battery with a electrode and a counter electrode (Applicants anode and cathode; P126) and a polyvinylidene fluoride sheet (Applicant's regular shape) separator comprising gel coated on one side (approximately 50%) of the separator surfaces (P36) and uncoated on the other separator surface in which anticipates the claimed invention. The gel polymer is made of PVDF polymers (P32). In addition, the claimed invention holds no novelty over the prior art. Although the Lee reference does not specifically disclose, a coating of gel polymer over 40-60% of a total separator area, however, the Lee reference discloses that the gel component contributes to good wet-out rate, good ionic conductivity (P11). Therefore, it would have been obvious to one of skilled in the art at the time the invention was made to Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to choose the instantly claimed value through process optimization, since it has been held that the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable values involve

only routine skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980).

Furthermore, the Lee reference discloses that the polymer gel is in a film pattern.

Regarding claims 1, 2, 5 10, it is noted that these claims comprise product-by-process limitations such as "coated" or "gravure coating". "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Since separator is the same as that of the Applicant's, Applicant's process is not given patentable weight in this claim.

Response to Arguments

13. Applicant's arguments filed 9/28/09 have been fully considered but they are not persuasive. Applicants principal arguments are:

- a. The Applicants' arguments regarding 35 U.S.C 112, second paragraph have been considered but are mooted because Applicants amended the claims.
- b. Applicants argue, "It is noted that Claims 4, 9, and 12 appear to have been inadvertently omitted from the listing of rejections in section 7 of the Office Action dated 6/26/09, and have not been expressly rejected as either anticipated or unpatentable; in the Office Action, the Examiner appears to treat these claims as obvious (see section 7, p. 4, last two lines). Applicants accordingly will address these claims as being allegedly unpatentable." However because these claims

are rejected under section **35 U.S.C 102/103** there exist an obvious typo. At any rate the independent claims were amended reconsideration was given to all of the claim limitations. Please see rejection above

c. The Applicants argue, " It is noted that Claims 4 and 9 have been completely omitted from the listing of rejections in section 8 of the Office Action dated 6/26/09, and have not been expressly rejected as either anticipated or unpatentable at all in the Office Action. Applicants accordingly assume these claims to be free of the cited art (Lee). If this is an incorrect assumption, Applicants request the Examiner correct the record and advise Applicants at the earliest possible date" The arguments have been considered, however, the Applicants amended the independent claims and therefore new consideration were given to all of the claims. Please see rejection above

d. The Applicants argue, "*Kawakami fails to disclose all elements of the instant claim 1 and its dependents, and cannot anticipate the claim. Claim 1 claims that the gel polymer is formed in a pattern on a substrate. Kawakami fails to disclose the formation of a pattern in allegedly corresponding layer 304. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."* *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628,631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). Moreover, "*It]he identical invention must be shown in as complete detail as is contained in the claim."* *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920

(Fed. Cir. 1989). Kawakami fails to disclose the element of a patterned gel polymer and hence fails to teach all elements of the instant claims, and therefore cannot anticipate the claims" However, Page 7 of Applicants disclose that there is no particular limitation to a "pattern" and therefore if the Lee or the Kawakami reference discloses a film or a sheet, this constitutes a pattern. Please see rejection above.

e. The Applicants argue, *"The methods of coating disclosed in Kawakami do not disclose the formation of patterns on a substrate, but only methods which would provide a uniform coating (casting, powder coating, etc.) Further, Kawakami clearly discloses filling of free pores in the substrate 305 by the gel polymer layer 304 which one skilled in the art will recognize as effecting both a complete and thorough coverage of a surface, where the gel polymer interpenetrates with the substrate. Kawakami is silent as to pattern formation in a gel polymer layer. One skilled in the art will appreciate that as such processes tend to teach complete coverage, they do not teach that a pattern would necessarily form. Applicants in fact contend that based on the teachings of Kawakami, there is little probability that anything other than a complete and uniform coating would be formed. Therefore, there is no indication that the limitation of a patterned gel polymer layer would be inherent to the disclosure of Kawakami"* However, the Kawakami et al. reference does disclose a formation of a pattern and therefore, the product-by-process limitations wherein the patentability of a product does not depend on its method of production. If the

product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Since separator is the same as that of the Applicant's, Applicant's process is not given patentable weight in this claim.

f. The Applicants argue, “*In a rechargeable lithium battery having the structural characteristics claimed in the instant claims, a path for discharging gases generated from electrode reactions can be provided, and thus, it is possible to prevent the gases from being trapped between each electrode and a separator s that an electrode assembly is maintained in a stable form. Therefore, it is possible to prevent premature deterioration of electrodes, thereby improving the battery life. Kawakami is silent as to this feature. There is therefore no teaching or suggestions to combine elements of the prior art to produce the present invention. The present invention is thus nonobvious*”. These arguments is not commensurate with the scope of the claims therefore are moot

g. The Applicants argue, “Lee fails to disclose a patterned gel polymer film, and therefore fails to disclose all elements of instant Claims 1 and 5, and cannot anticipate these claims.... Therefore, there is no indication that the limitation of a patterned gel polymer layer would be inherent to the disclosure of Lee “
However, like the Kawakami reference, the Lee et al. reference do disclose a film pattern of a gel polymer formed. Please see rejection above.

h. The Applicants argue, "*Lee discloses forming a coated surface with interpenetration of the gellable polymer into a polymer substrate, but does not disclose inclusion of a pattern over 40-60% of the surface of the substrate. In a rechargeable lithium battery having the structural characteristic as described in the instant claims however, a path for discharging gases generated from electrode reactions can be obtained from the patterning, and thus, it is possible to prevent the gases from being trapped between each electrode and a separator so that an electrode assembly is maintained in a stable form. Therefore, it is possible to prevent premature deterioration of electrodes, thereby improving the battery life. Lee is silent as to this feature. There is therefore no teaching or suggestions to combine elements of the prior art to produce the present invention. The present invention is thus nonobvious*" However, because the Lee reference discloses that the gel polymer are coated on one side of the substrate, the Lee reference discloses that the gel coating are at a minimum of 50% of the total separator area. Common sense teaches that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of the patents together like pieces of a puzzle. A person of ordinary skill is also a person of ordinary creativity, not an automaton. The question to be answered is whether the claimed invention is a product of innovation or merely the result of common sense, ordinary creativity, and ordinary skill. **KSR v. Teleflex**

- i. **The “total separator area” as claimed and “surface of the substrate” as argued are two different claim limitations.** The rest of the arguments do not commensurate with the scope of the claims and therefore are moot.
- j. The Applicants argue, “Thus, in summary, both Kawakami and Lee disclose a simple lamination or coated structure of a polymer gel on the support member or the polymer support layer film, and each fails to disclose a patterned polymer gel layer; and, each fails to provide a suggestion or incentive to modify Kawakami or Lee to include a patterned polymer gel layer.” Please see the response to arguments in section h.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HELEN O.K. CONLEY whose telephone number is (571)272-5162. The examiner can normally be reached on Monday-Friday 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HOC

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795